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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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Harold C Knecht III
Office of Intellectual Property Counsel
3M Innovative Properties Company
P O Box 33427
St Paul, MN 55133-3427

| EXAMINER | |
|---|---|
| CHANG, VICTOR S | |
| **ART UNIT** | **PAPER NUMBER** |
| 1771 | 8 |

DATE MAILED: 01/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/714,658 | GEHLSEN ET AL. | |
| | Examiner | Art Unit | |
| | Victor S Chang | 1771 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-32,34-36,43 and 47-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32,34-36,43 and 47-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Rejections not maintained are withdrawn.

3. Claims 1-6, 9-12, 17, 20-30, 37 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman et al. (US 5476712).

For claims 1-3, 6, 9, 20-22 and 48, Hartman's invention is directed to a double sided tape which includes pressure-sensitive adhesive layers on opposed sides of a coextruded multilayer carrier having a core formed of a thermoplastic elastomer containing a uniform distribution of voids and one or more skin layers formed of film-forming thermoplastic polymer (Abstract). Hartman also teaches that the voids are generated by a blowing agent comprising thermally expandable thermoplastic microspheres (column 11, lines 32-35, and column 12, lines 33-35). Further, it is noted that in Fig. 1, Hartman illustrates that the surfaces of the foam article are parallel to the flat or smooth surfaces of the skin layers and adhesive layers. The Examiner takes Official notice that it is well known that coextruded multilayer films are commonly made with surfaces having roughness Ra less than 75 μm, and the inner layers are substantially parallel to surface layers. As such it is believed that the foam article would inherently have surface roughness Ra less than 75 μm as well. Although Hartman does not expressly teach that a plurality of expandable polymeric microspheres are used, the Examiner takes Official notice that the use of a plurality of expandable polymeric

microspheres in a foam article is common and well known. Note also as evidence of the state of the art Lindeman et al. (US 5132061) which teaches that a plurality of microspheres are combined to form a foam gasket (column 2, lines 64-66 and column 3, lines 18-20). As such, it would have been obvious to one of ordinary skill in the art to incorporate a plurality of expandable microspheres in a foam article, motivated by the desire to control the degree of expansion at different temperatures.

For claim 4, Hartman lacks the specific teaching of embossing a pattern on the polymer foam surface. However, the Examiner takes Official Notice that embossing or micro-replicating a pattern on polymer foam surface is well known. Note also as evidence of the state of the art Wolinski et al. (US 3864181) which teaches that it is advantageous to work, cut, print, emboss, crease, glue and stamp the microsphere containing coating prior to foaming using conventional techniques and equipment without need to resort to special modifications necessary with foamed materials (column 6, lines 57-61). As such, in the absence of unexpected results, it would have been obvious to one of ordinary skill in the art to implement embossing pattern on the polymer foam surface, motivated by the desire to achieve an esthetic appearance.

For claim 5, Hartman lacks the specific teaching of embossing or micro-replicating a pattern on the polymer foam surface. However, the Examiner takes Official Notice that embossing or micro-replicating a pattern on polymer foam surface is well known. Note also as evidence of the state of the art Mazurek et al. (US 5650215) which teaches that the performance properties of the pressure-sensitive adhesive articles can be tailored by varying the microstructure of the pressure-sensitive adhesive (Abstract

and Fig. 1). In Example 14, the microstructure is embossed and replicated on a foam surface (column 23, lines 3-12). As such, in the absence of unexpected results, it would have been obvious to one of ordinary skill to micro-replicate a pattern on a polymer foam surface, motivated by the desire to tailor the adhesive performance, as taught by Mazurek.

For claims 10-11, the Examiner takes Official notice that it is known art that foam article can be stretched to form an opaque polymer film. Note also as evidence of the state of the art Park et al. (US 4496620) which teaches a method of preparing an opaque polymer film by stretching the microsphere containing film to create opacifying voids therein (Abstract).

For claims 12 and 17, the Examiner takes Official notice that incorporating additives to modify polymer properties are old and well known. Note also as evidence of the state of the art Darvell et al. (US 4855170) which teaches that conventional additives such as dyes, pigments, fumed silica, chopped fibers, hollow glass microspheres, fillers, catalysts, crosslinking agents, and the like can be included in the adhesive to achieve specific effects (column 6, lines 58-62).

For claims 23-30 and 37, Hartman lacks express teachings of the microspheres having a uniform size distribution, the standard deviation of foam density and thickness, and the amount of microsphere breakage. However, these are each believed to be either inherently disclosed, or an obvious optimization to one of ordinary skill in the art, motivated by the desire to achieve suitable uniform foam properties for applications.

**4.** Claims 7-8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman et al. (US 5476712) either individually, or in view of Plamthottam et al. (US. 5100728).

The teachings of Hartman are again relied upon as set forth above.

For claims 7-8 and 18, Hartman lacks specific teaching of forming a foam article of pressure sensitive adhesive or heat activated adhesive. However, it is known art that acrylic pressure sensitive adhesive or heat activated adhesive can be coextruded to form adhesive tapes or sheets. Alternatively, it is noted that Plamthottam's invention is related to an acrylic pressure sensitive adhesive tape which comprises a carrier layer comprising an electron beam cured pressure sensitive adhesive matrix, 10 to 20% by volume low density microspheres. In the extruder, solvent is removed in one or more solvent removal units, and a solvent-free composition is extruded as the carried layer. Further, skin layers may be co-extruded with the carrier layer (Abstract and column 1, lines 10-15). As such, it would have been obvious to one of ordinary skill in the art to modify Hartman's polymer foam layer with a pressure sensitive polymer, as taught by Plamthottam, motivated by the desire to obtain a foamed pressure sensitive adhesive tape or sheet with uniformly distributed polymeric microspheres.

**5.** Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman et al. (US 5476712) either individually, or in view of Esmay et al. (US 4415615).

The teachings of Hartman are again relied upon as set for the above.

For claims 13-16, Hartman lacks specific teachings of having at least one discrete structure bonded to the polymer foam, and the foam is a multilayer article. However, the Examiner takes Official Notice that using coextrusion and/or multilayer lamination processes to form various polymer foam bonded to discrete structure and/or a multilayer article are common and well known. Alternatively, Esmay shows a multilayer structure of reinforced micorsphere containing foam sandwiched between two plastic films (Fig. 3 and column 6, lines 27-30). As such, it would have been obvious to one of ordinary skill in the art to make a polymer foam bonded to a discrete structure, motivated by the desire to reinforce the mechanical strength of the polymer foam.

**6.** Claims 19, 43, 49 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman et al. (US 5476712) either individually, or in view of Veasley et al. (US 5024880).

The teachings of Hartman are again relied upon as set forth above, in particular note the forming of extruded adhesive foam articles as set forth in section 4.

It is noted that Hartman lacks a specific teaching of using a polymer blend of thermoplastic elastomers to form the polymer matrix. However, it is believed that substituting Hartman's polymer matrix with a suitable melt extrudable polymer blend of adhesive polymer and thermoplastic elastomer is within the skill of the art. Alternatively, note that Veasley teaches a cellular pressure-sensitive adhesive membrane comprising from about 70 parts to about 98 parts of an acrylic polymer, and from 0 to about 25 parts of a monoethylenically unsaturated polar copolymerizable monomer, and correspondingly, from about 30 parts to about 2 parts of a saturated hydrocarbon

elastomer or blend of hydrocarbon elastomers containing at least one segment having a lower glass transition temperature than the acrylic copolymer. The adhesive has at least a first phase and a second phase, the first phase consisting primarily of the elastomer, and at least one phase is a continuous phase (Abstract). It is also noted that Veasley's polymers are inherently free of urethane or urea crosslinks and acrylate-insoluble. As such, it would have been obvious to one of ordinary skill in the art to use Veasley's polymer blend as the polymer matrix of Hartman's foam articles, motivated by the desire to improve the compression recovery property of the foam articles, as taught by Veasley.

**7.** Claims 31-32 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman et al. (US 5476712) either individually, or in view of Wolinski et al. (US 3864181).

For claims 31-32 and 34-36, Hartman does not expressly state the molecular weight and shear viscosity of the polymers. However, it is believed that selecting suitable molecular weight and consequently the related suitable shear viscosity (i.e., typically there is a proportional relation between molecular weight and shear viscosity) for appropriate polymer processing methods and improved mechanical strength of the polymers are believed to be either inherently disclosed, or an obvious optimization to one of ordinary skill in the art. Alternatively, Wolinski teaches that a crosslinked acrylic polymer based foamable coating formulation was prepared from an acrylic polymer which has a molecular weight from about 200,000 to 500,000 (column 10, lines 31-34). As such, it would be obvious to one of ordinary skill in the art, based on Wolinski's

teaching, to optimize the molecular weight, and therefore the shear viscosity, of Hartman's polymer, motivated by the desire to optimize the processability and the mechanical strength of the foam-like product.

**8.** Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman et al. (US 5476712) either individually, or in view of Sieverding (US 4833193).

The teachings of Hartman are again relied upon as set forth above, in particular note the forming of extruded adhesive foam articles as set forth in section 4.

It is noted that Hartman lacks a specific teaching of using a polymer capable of stretch activated release to form the polymer matrix. However, it is believed that substituting Hartman's polymer matrix with a suitable melt extrudable polymer capable of stretch activated release is within the skill of the art. Alternatively, note that Sieverding's invention is directed to thick pressure sensitive adhesive films comprising a homogeneous mixture based on 100% of the solids weight of the adhesive film of a triblock copolymer or in combination with a diblock copolymers (Abstract). A particularly preferred triblock copolymer is Kraton™ of an ethylene-1-butylene copolymer elastomer containing polystyrene end polymer groups, i.e., SEBS, as shown in Table I (column 2, lines 35-60). The adhesive films can be made by hot melt extrusion process (column 11, lines 57-60). Further, the adhesive film can be separated from the adhering surfaces and reshaped and used again as a pressure sensitive adhesive (column 7, lines 46-50). As such, it would have been obvious to one of ordinary skill in the art to use Sieverding's triblock copolymer blend as the polymer matrix of Hartman's foam

articles, motivated by the desire to obtain stretch releasable and reusable foam adhesive article.

**9.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S Chang whose telephone number is 703-605-4296. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

VSC
January 7, 2003

TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700